Ryan Towell

Meteorologist / Project Manager
Dewberry

States' Strategies to Include Climate Issues

State-level strategies

- Integrated planning: addressing climate change through hazard mitigation planning

State-level strategies

- **Hazard mitigation plans**
  - Required for eligibility for Federal disaster grants
  - Primary focus on natural hazards
  - Required updates:
    - State plans: every 3 years (changing to every 5 years)
    - Local plans: every 5 years
  - No explicit Federal requirement to include climate change

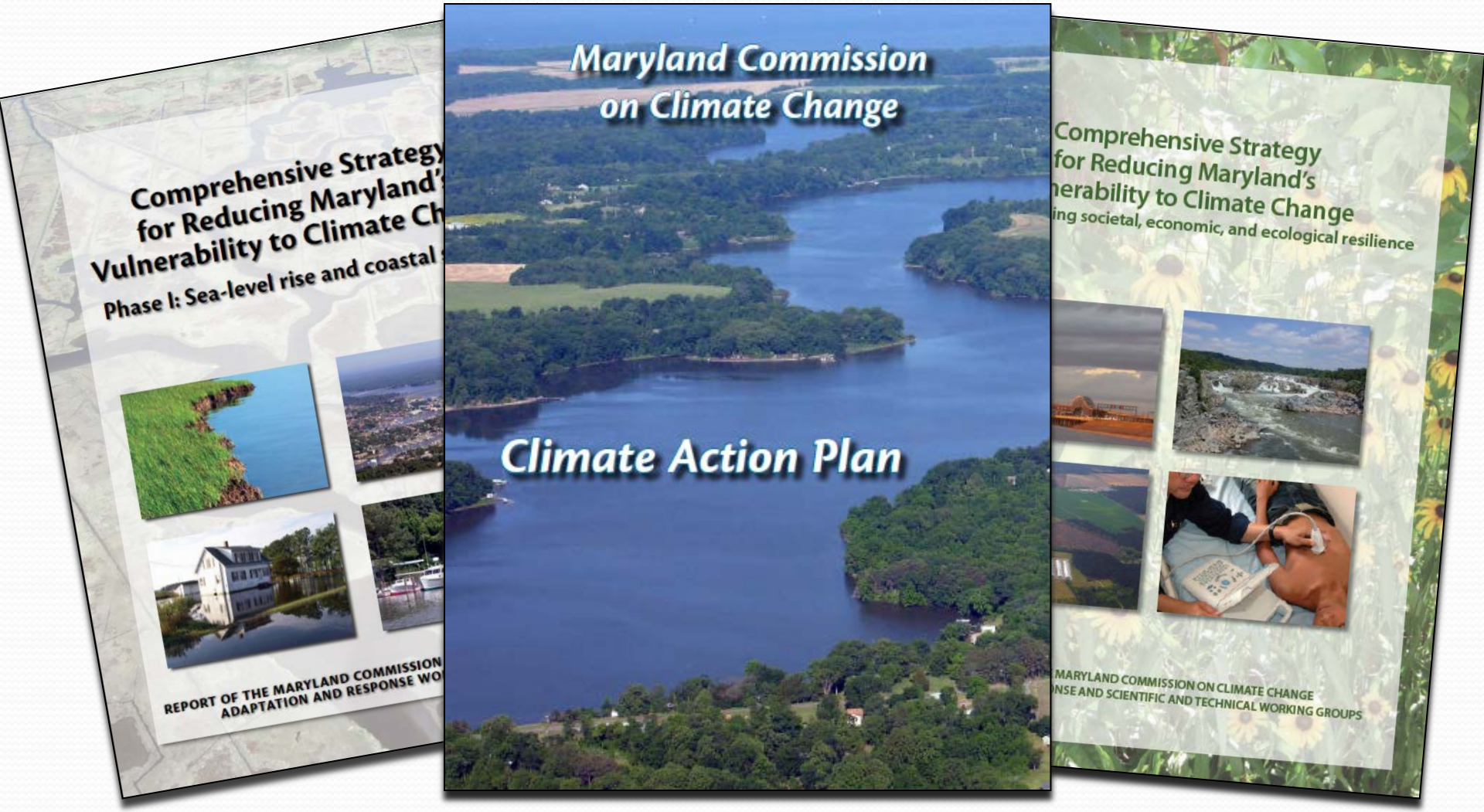
State-level strategies

- **Hazard mitigation plans**
  - Hazard Identification and Risk Assessment (HIRA)

State-level strategies

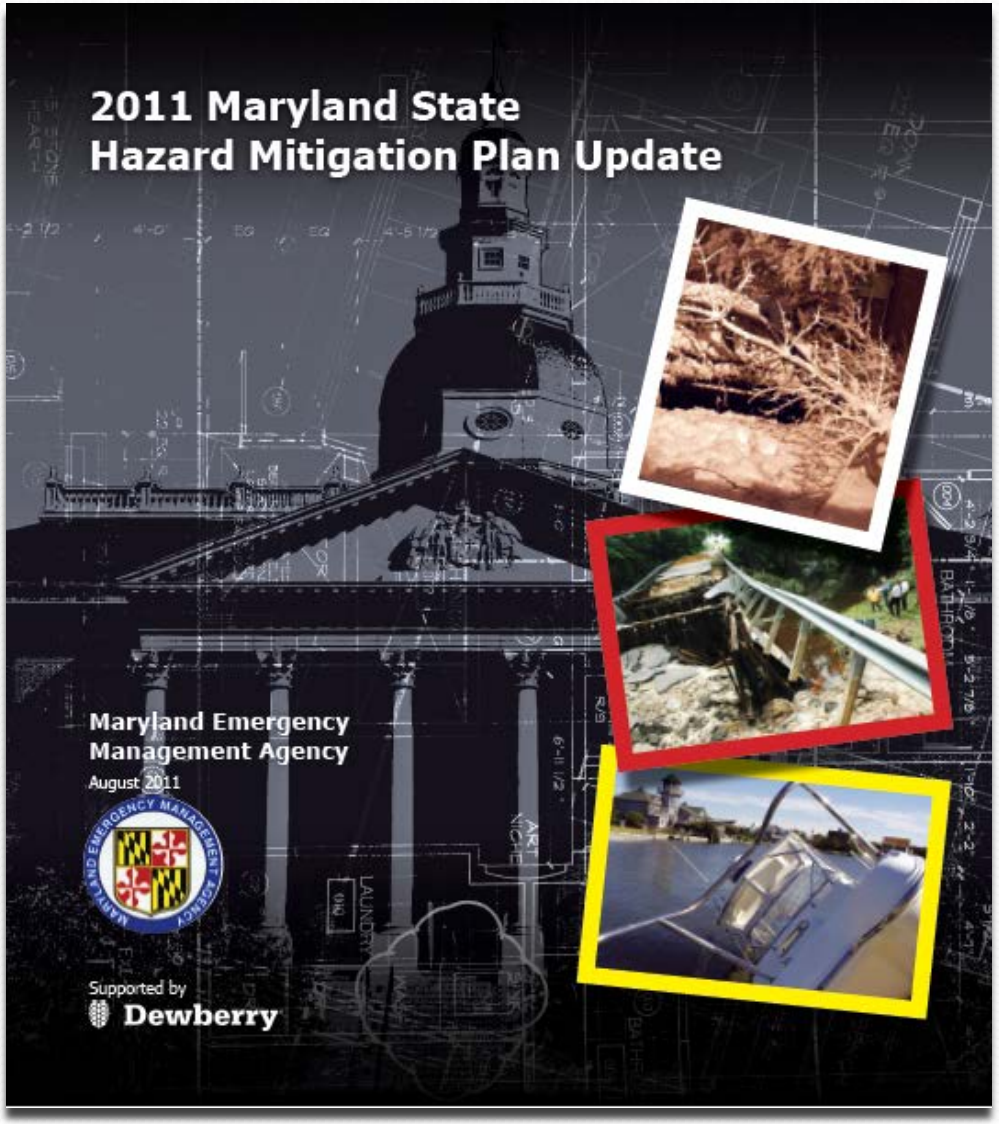
- **Hazard mitigation plans**
  - HIRA results inform mitigation strategy

Maryland


Comprehensive Strategy
for Reducing Maryland's
Vulnerability to Climate Ch
Phase I: Sea-level rise and coastal
REPORT OF THE MARYLAND COMMISSION
ADAPTATION AND RESPONSE WO
Maryland Commission
on Climate Change
Climate Action Plan
Comprehensive Strategy
for Reducing Maryland's
erability to Climate Change
ing societal, economic, and ecological resilience
MARYLAND COMMISSION ON CLIMATE CHANGE
NSE AND SCIENTIFIC AND TECHNICAL WORKING GROUPS

Maryland

- Previous Hazard Mitigation Plan (HMP) update had limited mention of climate change
- Integrated other State climate change efforts
- Performed sea level rise state and critical facility risk assessment

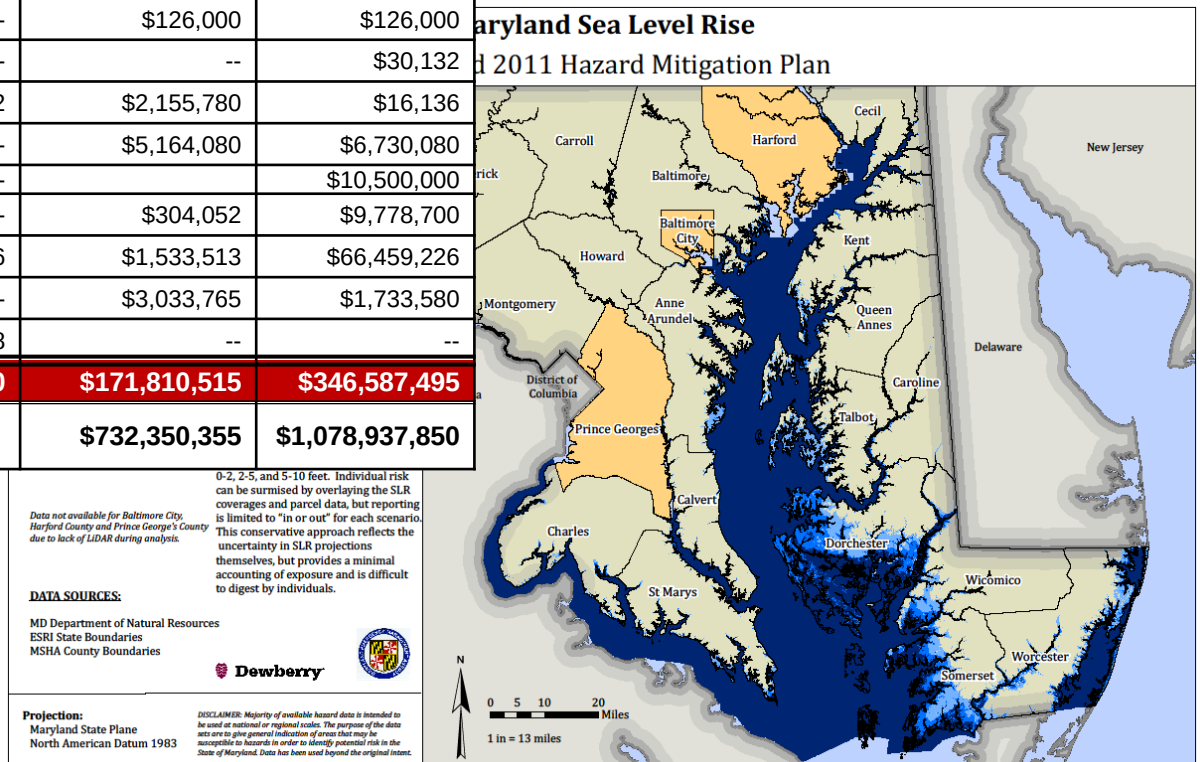


Maryland

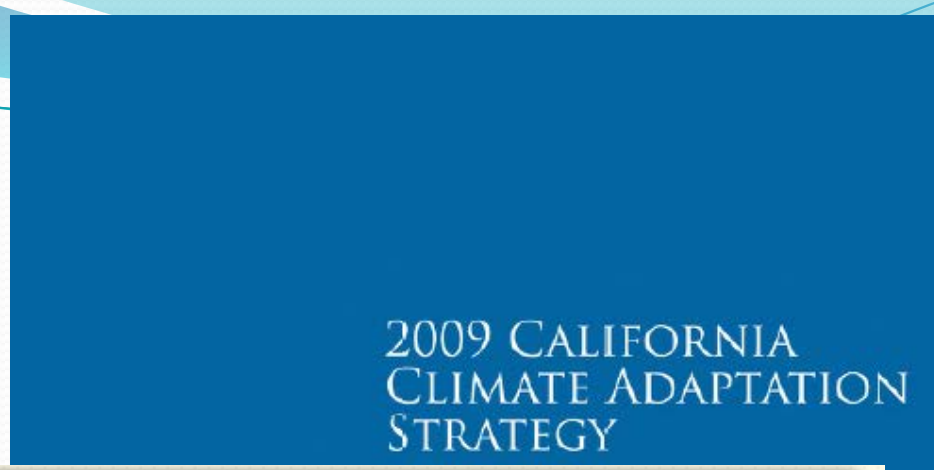
- HMP 2011 update considered climate change as a potential *amplifier* of existing natural hazards (i.e. flooding, heat, drought, etc.)
- Discussion of projections as related to specific hazards
- Potential future impact on hazard:
  - Frequency
  - Intensity
  - Distribution

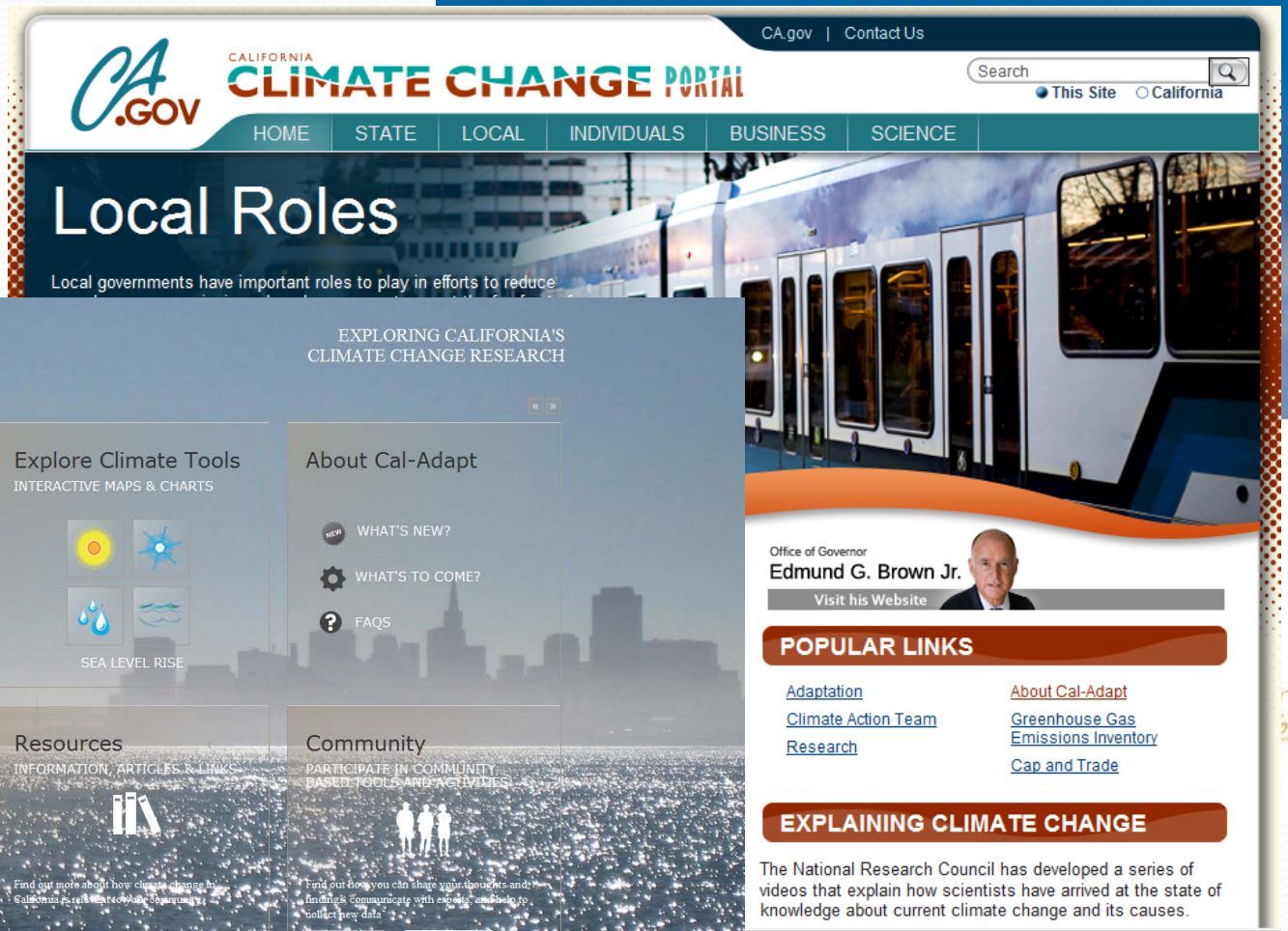
Maryland

State-Owned Facility Type	High Risk (0-2 ft RSLR)	Moderate Risk (2-5 ft RSLR)	Low Risk (5-10 ft RSLR)
Administrative Facility	--	$87,658,295	$34,440,604
Correctional Facility	--	$535,008	$267,504
Department of Natural Resources Facility	$2,989,496	$26,384,445	$13,329,838
Educational Facility	$507,142,828	$44,835,576	$203,175,694
Environmental Related Facility	--	$80,000	--
Fire Department Facility	--	$126,000	$126,000
Health Related Facility	--	--	$30,132
Judicial/Legal Facility	$2,505,472	$2,155,780	$16,136
Military Facility	--	$5,164,080	$6,730,080
Police Department Facility	--		$10,500,000
Social Services	--	$304,052	$9,778,700
Transportation Facility	$28,535,636	$1,533,513	$66,459,226
Utility/Infrastructure Facility	--	$3,033,765	$1,733,580
Historic Facility	$19,366,408	--	--
Grand Total by Risk Class	**$560,539,840**	**$171,810,515**	**$346,587,495**
	Cumulative Risk	**$732,350,355**	**$1,078,937,850**



California


2009 California
Climate Adaptation
Strategy


CA.gov | Contact Us
CA.GOV
CALIFORNIA
CLIMATE CHANGE PORTAL
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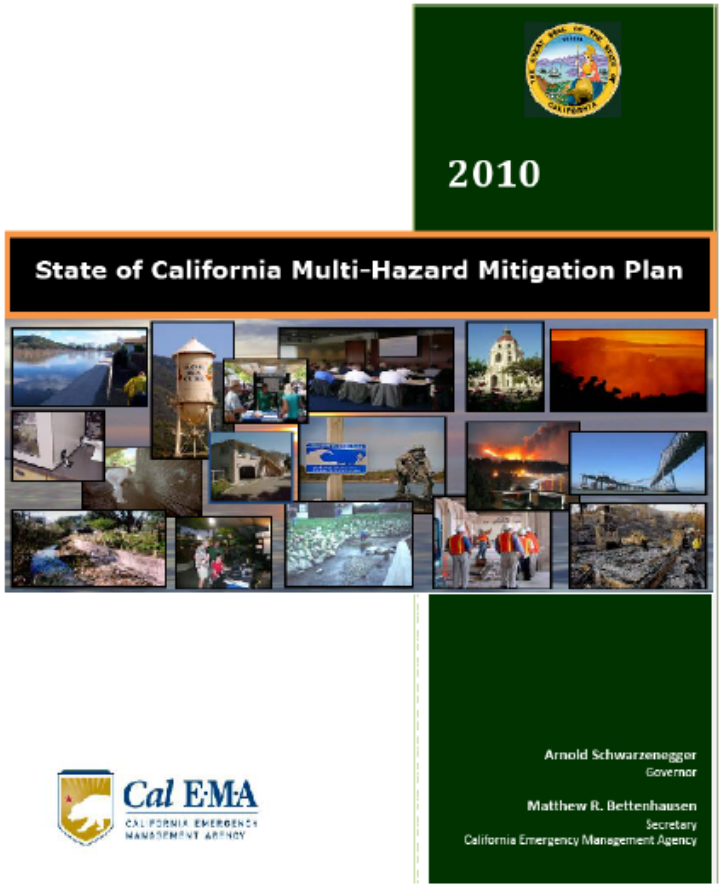
BUSINESS
SCIENCE
Local Roles
Local governments have important roles to play in efforts to reduce
cal-adapt
EXPLORING CALIFORNIA'S
CLIMATE CHANGE RESEARCH
View Local Profiles
QUICKLY EXPLORE CLIMATE PROJECTIONS FOR YOUR LOCAL AREA
74 F
68 F
62 F
1950
2000
2050
2100
Explore Climate Tools
INTERACTIVE MAPS & CHARTS
SEA LEVEL RISE
About Cal-Adapt
WHAT'S NEW?
WHAT'S TO COME?
FAQS
Access Data
ACCESS THE RAW DATA USED IN CAL-ADAPT
Select and download data in a variety of tabular and GIS formats
Resources
INFORMATION, ARTICLES & LINKS
Find out more about how climate change in California is related to your community
Community
PARTICIPATE IN COMMUNITY-BASED TOOLS AND ACTIVITIES
Find out how you can share your thoughts and findings, communicate with experts, and help to collect new data
Office of Governor
Edmund G. Brown Jr.
Visit his Website
POPULAR LINKS
Adaptation
Climate Action Team
Research
About Cal-Adapt
Greenhouse Gas Emissions Inventory
Cap and Trade
EXPLAINING CLIMATE CHANGE
The National Research Council has developed a series of videos that explain how scientists have arrived at the state of knowledge about current climate change and its causes.

California

- 2010 state HMP plan update added significant climate change elements (mitigation and adaptation)
  - Sourced 2009 California Climate Adaptation Strategy
    - Latest climate change science
- HMP describes climate change as a 'factor intensifying impacts of many natural hazards'

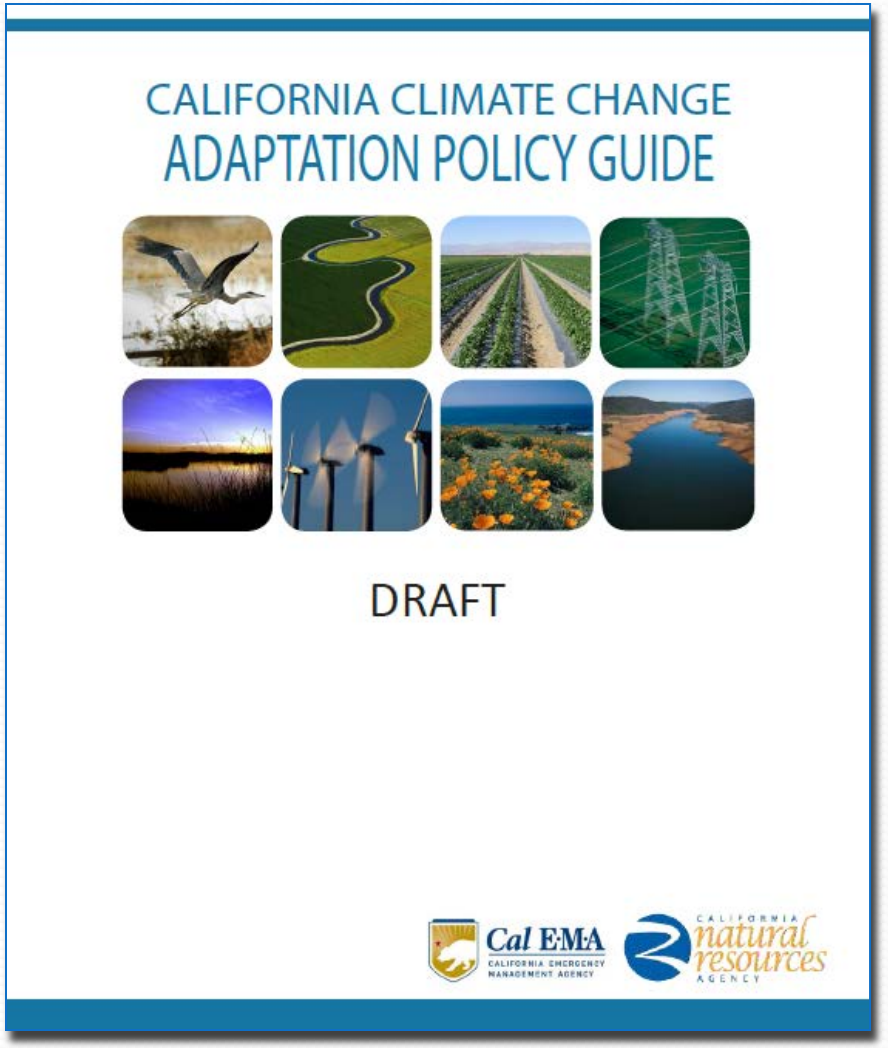


California

- Principles for incorporating climate change into state and local HMPs
  1. Agencies should determine local adaptive capacity
  2. Use/leverage state studies that describe latest science
  3. Identify populations most vulnerable to climate change
  4. Incorporate climate change into identifying/prioritizing hazard mitigation actions
  5. Adopt climate change adaptation actions into planning
  6. Coordinate adaptation and mitigation (GHGs) actions
  7. Educate/inform the public about climate change

California

- Draft April 2012
- Framework for local/regional climate change adaptation planning



Minnesota

2.5 Climate Adaptation

The United States Global Change Research Program published a report that highlights potential impacts to the Midwest because of climate change. The federal multi-agency study results are summarized here:

- During the summer, public health and quality of life, especially in cities, will be negatively affected by increasing heat waves, reduced air quality, and increasing insect and waterborne diseases. In the winter, warming will have mixed impacts.
- The likely increase in precipitation in winter and spring, more heavy downpours, and greater evaporation in summer would lead to more periods of both floods and water deficits.
- While the longer growing season provides the potential for increased crop yields, increases in heat waves, floods, droughts, insects, and weeds will present increasing challenges to managing crops, livestock, and forests.
- Native species are very likely to face increasing threats from rapidly changing climate conditions, pests, diseases, and invasive species moving in from warmer regions.

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MINNESOTA ALL-HAZARD MITIGATION PLAN

Section Two: State Profile

For the full report, see:

www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/regional-climate-change-impacts/midwest

The state of Minnesota has developed an Interagency Climate Adaptation Team. Staff from Public Safety participated, including Hazard Mitigation staff. This is a topic of growing interest for the state and mitigation staff and will be addressed as necessary.

Minnesota All-Hazard Mitigation Plan Update

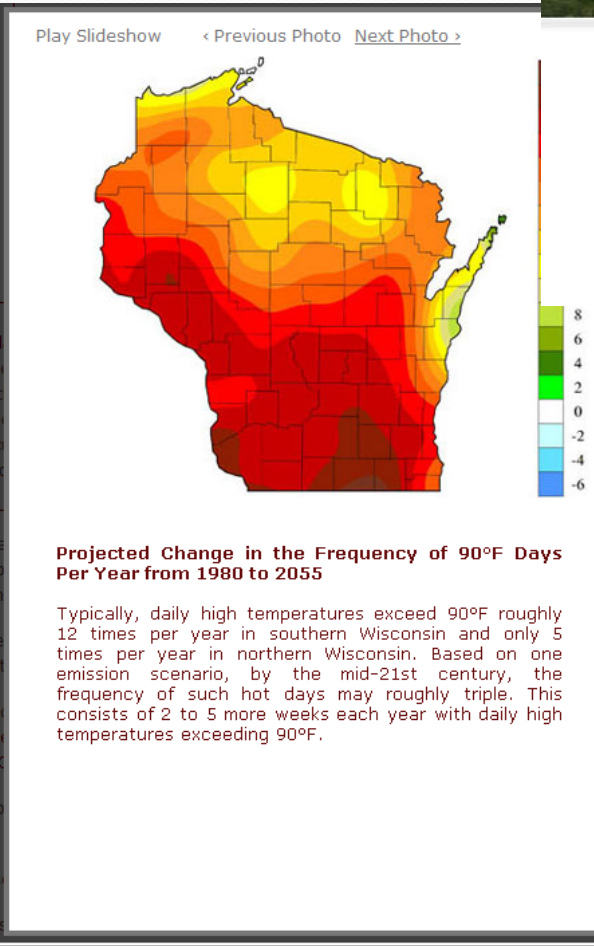
Approved *date 2011*

Minnesota Division of Homeland Security and Emergency Management

HSEM
Homeland Security and Emergency Management
Keeping Minnesota Ready

Wisconsin


Wisconsin Initiative on Climate Change Impacts
About WICCI
Contacts
Enter Search
Climate Change
Impacts
Adaptation
Resources
Overview
Adaptation Science
Adaptation WG
What are Wisconsin's possible ADAPTATION STRATEGIES?
Two terms dominate the discussion of climate change and how to deal with it. One is mitigation – taking action to curb emissions of carbon dioxide and other heat-trapping gases in an effort to reduce global warming. The other is adaptation, which involves identifying and preparing for the potential impacts of climate change likely to occur even as we work to mitigate it.
The Wisconsin Initiative on Climate Change Impacts focuses on adaptation, and its Working Groups are the key components in those efforts. Each Working Group focuses on a particular issue, activity, ecosystem or geographic area to identify potential vulnerabilities and impacts, and to develop recommendations to increase resilience in the face of change.
A few possible examples of adaptive measures could include redesigning stormwater management systems to handle increasing volumes of stormwater; planting species of trees more suited for longer, warmer growing seasons; planting vegetation to provide more shade for coldwater trout streams; and developing heat emergency action plans to assist vulnerable urban populations during heat waves.
Some adaptation efforts will be reactive, handling situations as they arise. But WICCI strives to be pro-active, anticipating challenges and preparing for them ahead of time. Effective planning and preparation could help save wildlife, property, money and even lives.
Visit the adaptation science page to learn more about how these topics are addressed.


Play Slideshow
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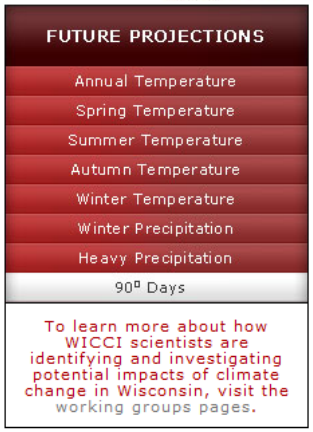
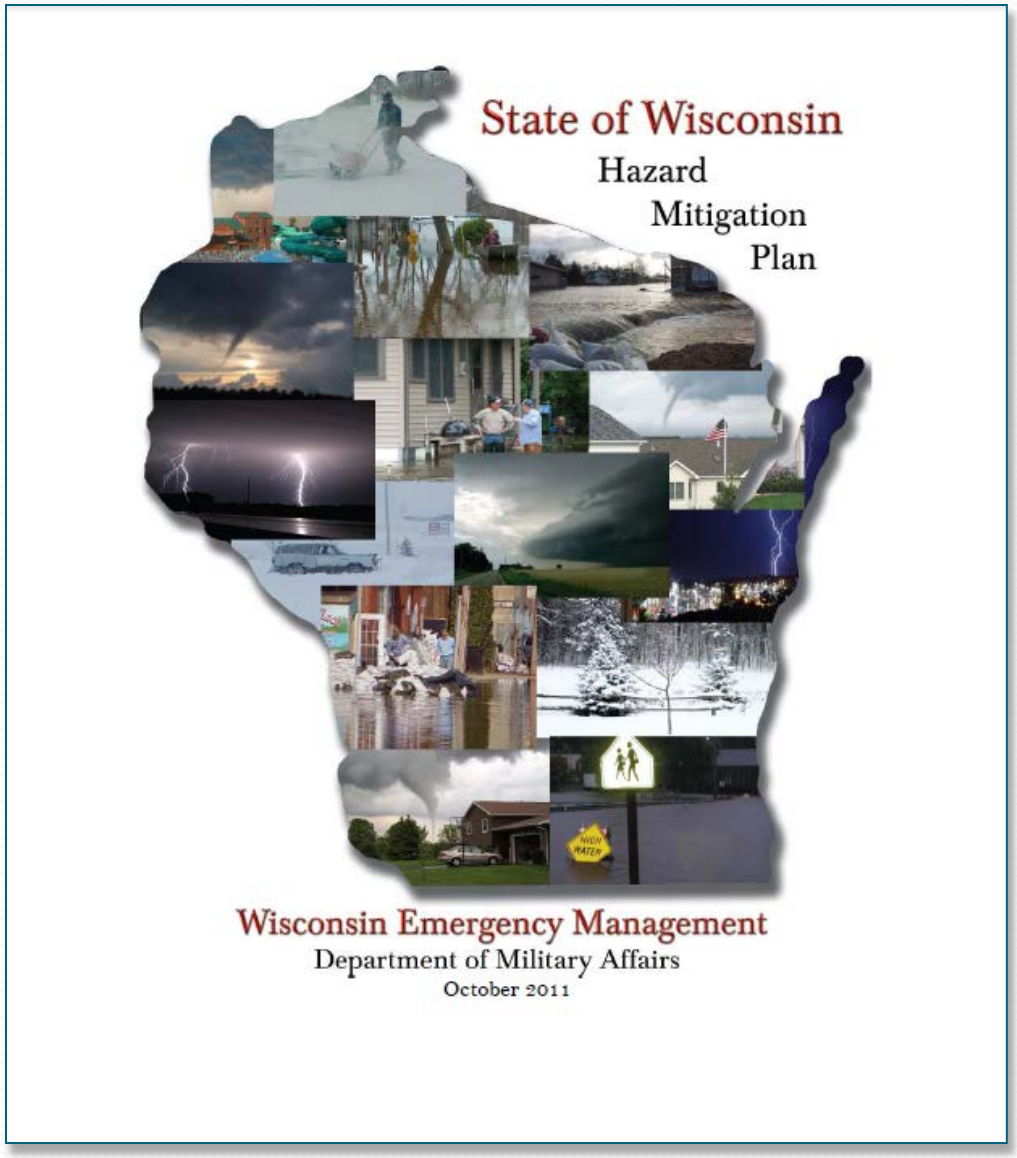
Next Photo ›
8
6
4
2
0
-2
-4
-6
Projected Change in the Frequency of 90°F Days Per Year from 1980 to 2055
Typically, daily high temperatures exceed 90°F roughly 12 times per year in southern Wisconsin and only 5 times per year in northern Wisconsin. Based on one emission scenario, by the mid-21st century, the frequency of such hot days may roughly triple. This consists of 2 to 5 more weeks each year with daily high temperatures exceeding 90°F.


FUTURE PROJECTIONS
Annual Temperature
Spring Temperature
Summer Temperature
Autumn Temperature
Winter Temperature
Winter Precipitation
Heavy Precipitation
90º Days
To learn more about how WICCI scientists are identifying and investigating potential impacts of climate change in Wisconsin, visit the working groups pages.

Wisconsin

- Mentioned Wisconsin Initiative on Climate Change Impacts
- Brief discussion of changes in historical trends
- List additional data sources
- Promises to expand treatment of climate change in 2014 plan update



Wisconsin

- FEMA Region V Crosswalk of 2011 WI HMP

STANDARD STATE HAZARD MITIGATION PLAN REVIEW CROSSWALK **FEMA REGION V**

State: Date of Plan:

RISK ASSESSMENT: *§201.4(c)(2): [The State plan must include a risk assessment] that provides the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments.*

Identifying Hazards

Requirement §201.4(c)(2)(i): [The State risk assessment shall include an] overview of the type ... of all natural hazards that can affect the State ... .

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan provide a description of the type of **all natural hazards** that can affect the State? If the hazard identification omits (without explanation) any hazards commonly recognized as threats to the State, this part of the plan cannot receive a Satisfactory score.	Section 3.2.1, pp. 3-3 to 3-5	Ok. The state plan begins to discuss issues regarding climate change. The discussion is preliminary and general and the next plan update should include more a more detailed risk assessment for climate change and a more detailed treatment of mitigation strategies.		X
		SUMMARY SCORE		X

Wisconsin

- FEMA Region V Crosswalk of 2011 WI HMP

Reviewer's Comments
Ok. The state plan begins to discuss issues regarding climate change. The discussion is preliminary and general and the next plan update should include more a more detailed risk assessment for climate change and a more detailed treatment of mitigation strategies.

Commonalities

- Political environment significantly influences CC treatment in HMPs
- Leveraged existing climate change efforts/data
- Integrated/coordinated with other existing planning processes
- Collaborative
  - Gather all stakeholders: public and private sectors, citizens
- A first step: no/low regrets adaptation strategies/actions